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**Brunsing Associates, Inc.**

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January 21, 2005

Project No. 766

Mr. Gary Holtz  
Sonoma County Department of Health Services  
Division of Environmental Health  
3273 Airway Drive, Suite D  
Santa Rosa, California 95403-2097

**Soil and Groundwater Investigation and Sensitive Receptor Survey**  
**LePage Irrevocable Trust**  
**2077 Sea Way**  
**Bodega Bay, California**

Dear Mr. Holtz:

This letter presents the results a soil and groundwater investigation carried out by Brunsing Associates, Inc. (BAI) for the former owners of the property located at 2077 Sea Way, Bodega Bay, California (Plate 1). An underground storage tank (UST) that had contained home heating oil was removed from the study site on July 2, 2003. The results of the UST removal and subsequent soil excavation were presented in the BAI document "Underground Storage Tank Removal and Contaminated Soil Excavation", dated October 6, 2003. Based on a review of the data presented in the October 6, 2003 BAI document, Sonoma County Department of Health Services, Division of Environmental Health (SCDHS) issued a letter dated October 30, 2003, requesting a workplan be submitted to investigate the study site.

BAI submitted the document "Workplan for a Soil and Groundwater Investigation" dated January 28, 2004, outlining tasks to perform a soil and groundwater investigation at the study site. The workplan received approval, with comments, as outlined in the SCDHS letter dated February 4, 2004. The results of the investigation proposed in the workplan are presented herein.

## **BACKGROUND**

A UST containing home heating oil was removed from the site in July 2003 by Martinelli Excavating, Inc. (Martinelli). The results of the UST removal and subsequent soil excavation was presented in the BAI document "Underground Storage Tank Removal and Contaminated Soil Excavation", dated October 6, 2003. The UST removal inspection was performed by Captain John McGuire of the SCDHS on July 2, 2003. The soil sample (Ex-1) collected beneath the UST at 9.0 feet below ground surface (bgs) contained a concentration of total petroleum hydrocarbons (TPH) as diesel at 640 milligrams per kilogram (mg/kg) and nondetectable concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX). Based on the presence of petroleum product odor in the UST backfill and the analytical test results of soil sample Ex-1, Captain John McGuire approved excavation of obviously impacted soil for off-site disposal. Approximately 30 cubic yards of soil were excavated and disposed of off-site.

No groundwater was encountered in the excavation at 11 feet bgs. Practical refusal for the excavating equipment in the excavation was at 11 feet bgs. Additional soil was not excavated from the southern sidewall because of the proximity of the house and sidewalk.

After the excavation was terminated, one soil sample was collected from each sidewall and an additional soil sample was collected from the excavation bottom. The final limits of the excavation are shown on Plate 2.

The excavation was backfilled by Martinelli on July 5, 2003 with drain rock from the excavation bottom until approximately 3 feet bgs. A geotextile fabric was placed on the compacted drain rock and the final 3 feet was backfilled with topsoil.

The analytical results of the soil sample collected beneath the UST indicated that there had been a release of home heating oil at the study site. The soil sample collected from the bottom of the excavation at 11 feet bgs (Ex-2) contained a concentration of TPH as diesel at 320 mg/kg (Table 1). The soil sample collected from the southern sidewall at 10 feet bgs (Ex-6) contained 330 mg/kg of TPH as diesel. The locations of the soil samples collected from the excavation are shown on Plate 2.

## SOIL AND GROUNDWATER INVESTIGATION

### Drilling and Soil Sampling

BAI supervised the advancement of the four soil borings (B-1 through B-4) on August 24, 2004, by Clear Heart Drilling, LLC. The locations of the soil borings are shown on Plate 3. The borings were advanced using 4-inch outer diameter, solid-stem augers. Soil samples were collected by driving a split-spoon sampler into undisturbed soils. The split-spoon sampler was cleaned between sample drives and was lined with clean, decontaminated, 2.0-inch diameter brass tubes. Upon retrieval of the sampler, the brass tubes were removed and examined for physical characteristics. An appropriate description of the soil sample using the Unified Soil Classification System was entered onto the boring log. After physical characteristics were noted, the ends of the tubes were covered with Teflon sheets and secured by plastic caps. The brass tubes were labeled using a waterproof marker to designate the location, date, name of person doing the sampling, depth at which the sample was taken, and sample ID. All samples retained for analytical testing were logged onto a chain-of-custody record and placed in a cooled ice chest. The soil samples were submitted to BACE Analytical and Field Services (BAFS) within twenty-four hours of collection.

### Groundwater Sampling

Borings B-1 and B-2 were each drilled to a total depth of 20.0 and 20.5 feet bgs, respectively. Borings B-3 and B-4 were each drilled to total depths of 18 feet bgs. After reaching the total depth in all four borings, a temporary 2-inch diameter well with 0.020-inch slotted casing was installed in each boring. Approximately 1-gallon of groundwater was purged from borings B-1, B-3 and B-4 prior to collection of the groundwater samples. Approximately 1/2-gallon of groundwater was purged from boring B-2 prior to collection of the groundwater sample. The groundwater samples collected from borings B-1 through B-4 were collected using clean, disposable bailers



and were transferred to laboratory-supplied containers. The samples were transported to BAFS, under a chain-of-custody record. The collection, documentation, and transporting of the samples were carried out in accordance with the methods stipulated in BAI's January 28, 2004 workplan.

All soil borings were abandoned by removing the casings, filling the borings from total depth to approximately 1-foot bgs with hydrated bentonite chips, and from 1-foot bgs to ground surface with clean native material.

#### Subsurface Conditions Encountered

Boring B-1 was drilled within the backfill of the excavation. The subsurface conditions encountered in boring B-1 was a silty sand from the ground surface to approximately 3 feet bgs. A sandy gravel that was used to backfill the former UST excavation was encountered from approximately 3 feet to 5 feet bgs. The sandy gravel was underlain by a sandy silt down to approximately 8 feet bgs. Silty gravel was encountered from approximately 5 feet to approximately 14 feet bgs. A very dense sandy silt or weathered siltstone was encountered at approximately 14 feet bgs to 20 feet bgs. The total depth of boring B-1 was 20.0 feet bgs where practical refusal was achieved. Groundwater was initially encountered at approximately 19.5 feet. Boring B-1 was left open for most of the day. The depth to groundwater measured prior to groundwater sample collection was 17.3 feet bgs.

The subsurface conditions encountered in boring B-2 was a sandy silt from ground surface to approximately 2 feet bgs. An approximately 3-foot thick sandy clay was present below the sandy silt to the depth of approximately 5.75 feet bgs. A silty gravel was encountered from approximately 5.75 feet to possibly 20 feet bgs. There was no recovery from the sample drive at 20 feet, where practical refusal was encountered. Lithified material, most likely weathered siltstone, was observed on the center plug from 20 feet bgs. Groundwater was encountered in the borings at approximately 20 feet bgs.

The subsurface conditions encountered in borings B-3 and B-4 were a sandy silt from ground surface to approximately 3 to 4 feet bgs. A 5-foot thick sandy gravel was present below the sandy silt at boring B-3. Beneath the sandy gravel at B-3, and the sandy silt in boring B-4, a silty gravel layer was encountered. Lithified material, most likely weathered siltstone rock, was encountered at approximately 17 to 18 feet in borings B-3 and B-4, representing practical refusal. Groundwater was encountered in borings B-3 and B-4, at approximately 17.5 feet bgs.

Based on the depth to bedrock encountered in all four borings (approximately 18 feet bgs in borings B-3 and B-4 and approximately 20 feet bgs borings B-1 and B-2), it appears that the top of the bedrock has a northerly slope in the area of the former UST.

Logs of borings B-1 through B-4 are enclosed as Plate 4 through Plate 7, respectively. The Unified Soil Classification System is presented on Plate 8.

#### Soil Analytical Results

One or two soil samples from each boring were submitted for analytical testing. Soil samples from borings B-1, B-2, and B-4 at 11.0 and 10.5 feet bgs representing the



approximate bottom of the July 23, 2003 soil excavation were submitted for analytical testing. A soil sample from boring B-3 was not recovered at this depth. Soil samples from depths of 15 or 18 feet bgs from borings B-1, B-3, and B-4 were also submitted for analyses. Soil samples were not recovered from the 15-foot and 20-foot sample drives in boring B-2.

All soil samples were analyzed for TPH as diesel and BTEX. None of the analytes were reported in the samples collected from borings B-2, B-3, and B-4. The soil sample from boring B-1 at 11.0 feet bgs reported nondetectable concentrations of TPH as diesel and BTEX, and the sample collected from boring B-1 at 15.0 feet bgs indicated concentrations of TPH as diesel at 3.0 mg/kg and nondetectable concentrations of BTEX. A summary of the soil sample analytical test results is presented in Table 1. Copies of the analytical laboratory report is attached as Appendix A.

#### Groundwater Analytical Results

A groundwater sample was collected from each boring and submitted for analytical testing. The analytical test results of the groundwater samples collected from borings B-1, B-2, and B-4 reported nondetectable concentrations of TPH as diesel and BTEX. The groundwater sample collected from boring B-3 contained TPH as diesel at 0.30 milligrams per liter (mg/l) and nondetectable concentrations of BTEX. A summary of the groundwater analytical results is presented in Table 2. A copy of the BAFS analytical laboratory report is attached as Appendix B.

### **SENSITIVE RECEPTOR SURVEY**

A Sensitive Receptor Survey (SRS) was performed in September and October 2004 for the 2077 Sea Way, Bodega Bay, California site by BAI. The SRS included identification of potential groundwater plume receptors (wells and surface water bodies) within a 1,000-foot radius. An inquiry was also made to the Bodega Bay Public Utility District for determination of municipal wells within ½-mile radius of the site. The identification of domestic wells within 1,000 feet of the site was conducted by a door to door survey of property residents and/or owners and a search of the Sonoma County Permits and Resources Management Department (SCPRMD) well files.

#### Identification of Domestic and Irrigation Wells

In order identify domestic wells in the vicinity of the site, a door-to-door survey was conducted, and owners and/or residents were asked if a drinking water well or irrigation well is located on the parcel. Of those that responded, there were no wells indicated on any of the parcels within a 1,000-foot radius of the site.

A search for water well drillers reports for wells within an approximate 1,000-foot radius of the study site was conducted at both the SCPRMD and the State of California Department of Water Resources (DWR). There were no wells noted in the SCPRMD files within 1,000 feet of the site. Based on the DWR Well Drillers Report search, there are no water supply wells within a 1,000-foot radius area of the study site.



### Municipal Wells

BAI contacted the Bodega Bay Public Utility District to request locations of municipal wells within a ½-mile radius of the study area. The closest municipal well to the study site is approximately 2 miles to the northwest, at the Bodega Bay Public Utility District Sand Dunes well field.

### Surface Water Bodies

The only surface water body found within 1,000 feet of the site is the Mantua Gulch seasonal drainage swale located adjacent to the east of the study site. Within the radius of interest, Mantua Gulch seasonal drainage swale flows from the northeast to the southwest. The channel of the Mantua Gulch seasonal drainage swale parallels the eastern perimeter of the study site. No water was present during the performance of the SRS in September and October 2004. The location of Mantua Gulch in relation to the study site is shown on Plate 1.

### Underground Utility Trenches

Permeable backfill used in underground utility trenches can sometimes act as preferential pathways for migration of contaminants. BAI requested locations of public utilities, within a 1,000-foot radius of the study site, from the Bodega Bay Public Utilities District (BBPUD). The BBPUD provided maps of utilities, which include sewer, water, and storm drain lines for review at the BBPUD office. The area in the vicinity of the study site is residential; therefore underground telephone, power, and cable lines are most likely within the 1,000-foot radius.

BAI checked the BBPUD utilities maps for the depths of the sewer lines, storm drain lines and drinking water supply lines. The sewer lines were buried the deepest of all the utility lines in the vicinity of the study site. For the sewer line, the data presented on the documents "BBPUD Bodega Harbor Unit 2 As Built Drawings 12 and 13 of 31, Stations 5.66 to 16.48", by M. Hudis Consulting Civil Engineer, dated February 4, 1977, indicates that the sewer line in the northern portion of the study area is approximately 12 feet below the street elevation and is approximately 8 feet below the street elevation on the southern and eastern portion of the study area. Please note that the grade of the streets (Sea Way, Tom Jones Court, Cutlass Court, and Spyglass Court) is steeper in the northern portion of the study area where the sewer line is deeper relative to the street surface than in the southern portion of the study area (Dubloon Court, Compass Court and Mainsail Drive). The sewer line is shown to be 6 inches in diameter.

Therefore, it appears that the bottom of the sewer trench is likely approximately 8 to 12 feet below the road surface. For the storm drain, the distance between the rim and invert for the closest manhole is not provided on the map. At the study site location, the drain flow direction is to the southwest. It is BAI's understanding that, in general, storm drain lines are at a depth of approximately 3 feet bgs, and from the maps, the drain line is a 30-inch diameter pipe, therefore, the bottom of the storm drain trench would likely be approximately 6 feet bgs.



## CONCLUSIONS

### Soil Conditions

The analytical test results of the soil sample collected from beneath the former UST indicates there has been a release of product from the former tank. Approximately 30 cubic yards of impacted soil was excavated and disposed of off-site. Practical refusal for the excavating equipment in the excavation was at 11 feet bgs. The analytical test results of the excavation confirmation soil samples indicated that no contamination remained to the north, east, and west of the former UST (Table 1). The proximity of the existing residence precludes any further soil excavation to the east. The analytical test results of the soil samples collected from the excavation indicate that there was petroleum hydrocarbon contamination in the soil on the south side of the excavation (Sample Ex-6) and in the center bottom of the excavation at 11.0 feet bgs (Sample Ex-2; Table 1). The maximum TPH as diesel concentration remaining at the excavation limits is 330 mg/kg.

Soil boring B-1 was drilled within the limits of the former excavation in an attempt to characterize the depth of the soil contamination in the vicinity of soil sample Ex-2 (Table 1). The analytical test results of the soil sample collected from boring B-1 at 15.0 feet bgs reported a concentration of TPH as diesel at 3.0 mg/kg. The soil sample collected from boring B-1 at 10 feet did not contain a detectable TPH as diesel concentration, whereas sample Ex-2 at 11 feet bgs contained TPH as diesel at 320 mg/kg. The soil samples analyzed from boring B-1 were intended to define the vertical extent of the soil contamination that could not be removed during the soil remediation activities. The final limits of the excavation and the soil sample locations are shown on Plates 2 and Plate 3.

### Groundwater Conditions

The assumed groundwater flow direction at the study site is easterly based on the slope of the site topography (moderate slope to the east) and the presence of Mantua Gulch to the east. Based on the depth to bedrock encountered in all four borings, approximately 18 to 20 feet bgs, it appears that the top of the bedrock is sloping northerly in the area of the former UST. Groundwater was encountered in all four borings at approximately 18 to 20 feet bgs. Assuming an easterly groundwater flow direction, borings B-2 and B-3 were drilled at locations anticipated to represent groundwater conditions downgradient of the former UST excavation area. The approximate topography slope at the study site and Mantua Gulch are shown on Plate 1.

The analytical test results of the groundwater samples collected from borings B-1, B-2, and B-3 indicate that there has not been an impact to the groundwater from the presence of the former UST to the north, west, and northeast. The analytical test results of the groundwater sample collected from boring B-3 indicates a low level of TPH as diesel (0.30 mg/l) present in the groundwater southeast of the former UST (Table 2).



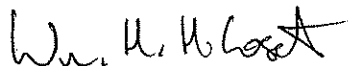
Sensitive Receptor Survey

While there is a private residence located to the east and south of the former UST, there are no basements for any potential vapors to collect in. The underground utilities identified during the SRS are not in the vicinity of boring B-3 or the excavation, therefore should not provide conduits for contaminated vapors or water. There were no documented domestic water supply wells or municipal wells within the SRS study area. The private residences within the SRS study area have water supplied by the BBPUD.

Based on the low levels of TPH as diesel reported in the groundwater sample collected from boring B-3, BTEX not detected in any of the groundwater or soil samples, and no sensitive receptors identified that could come in contact with the impacted groundwater in the area of boring B-3, BAI recommends that this site be reviewed for no further action.

If you should have any questions regarding this report, please do not hesitate to contact Bill Coset or Diana Dickerson at (707) 838-3027.

Respectfully submitted,

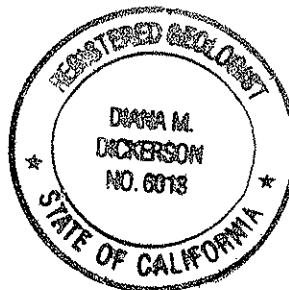


William H. H. Coset  
Project Geologist



Diana M. Dickerson, R.G.  
Principal Geologist

WHHC/DMD/wc



Cc: Mr. Luis Rivera  
Mr. John LePage



## **Attachments**

### Tables

- Table 1. Analytical Test Results of Soil Samples
- Table 2. Analytical Test Results of Groundwater Samples

### Plates

- Plate 1. Site Vicinity Map
- Plate 2. Excavation Sample Location Map
- Plate 3. Soil Boring Location Map
- Plate 4. Log of Boring B-1
- Plate 5. Log of Boring B-2
- Plate 6. Log of Boring B-3
- Plate 7. Log of Boring B-4
- Plate 8. Unified Soil Classification Chart

### Appendix

- Appendix A. Analytical Laboratory Report for Soil Samples
- Appendix B. Analytical Laboratory Report for Groundwater Samples





## TABLES



**Table 1. Analytical Test Results of Soil Samples**

2077 Sea Way  
Bodega Bay, California

Sample Number	Sample Location	Sample Depth (in feet bgs)	TPH as diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (µg/kg)
<b>UST Removal and Excavation Verification Samples</b>							
Ex-1	beneath UST, south end	9.0	640	<50	<50	<50	<50
Ex-2	bottom	11.0	320	<25	<25	<25	<25
Ex-3	north sidewall	9.0	<1.0	<5.0	<5.0	<5.0	<5.0
Ex-4	east sidewall	9.0	<1.0	<5.0	<5.0	<5.0	<5.0
Ex-5	west sidewall	10.0	<1.0	<5.0	<5.0	<5.0	<5.0
Ex-6	south sidewall	10.0	330	<25	<25	<25	<25
Stockpile	4-point composite	na	210	<15	<15	<15	<15
<b>Soil Boring Samples</b>							
B-1	within excavation limits	11.0	<2.0	<5.0	<5.0	<5.0	<5.0
B-1	within excavation limits	15.0	3.0	<5.0	<5.0	<5.0	<5.0
B-2	north of excavation	10.5	<2.0	<5.0	<5.0	<5.0	<5.0
B-3	east of excavation	15.0	<2.0	<5.0	<5.0	<5.0	<5.0
B-4	west of excavation	10.5	<2.0	<5.0	<5.0	<5.0	<5.0
B-4	west of excavation	18.0	<2.0	<5.0	<5.0	<5.0	<5.0

**Notes:**

UST = Underground Storage Tank.

< = less than symbol indicates not detected at specified reporting limit.

TPH = total petroleum hydrocarbons.

mg/kg = milligrams per kilogram.

µg/kg = micrograms per kilogram.

na = not applicable.

Sample depths are measured in feet below ground surface (bgs).

UST and verification soil samples were collected on July 2, 2003.

Boring soil samples were collected on August 24, 2004.



**Table 2. Analytical Test Results of Groundwater Samples**

2077 Sea Way  
Bodega Bay, California

Sample Number	TPH as diesel (mg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Xylenes (µg/l)
<b>Soil Boring Grab Groundwater Samples</b>					
B-1	<0.050	<0.5	<0.5	<0.5	<0.5
B-2	<0.050	<0.5	<0.5	<0.5	<0.5
B-3	0.30	<0.5	<0.5	<0.5	<0.5
B-4	<0.050	<0.5	<0.5	<0.5	<0.5

**Notes:**

< = less than symbol indicates not detected at specified reporting limit.

TPH = total petroleum hydrocarbons.

mg/l = milligrams per liter.

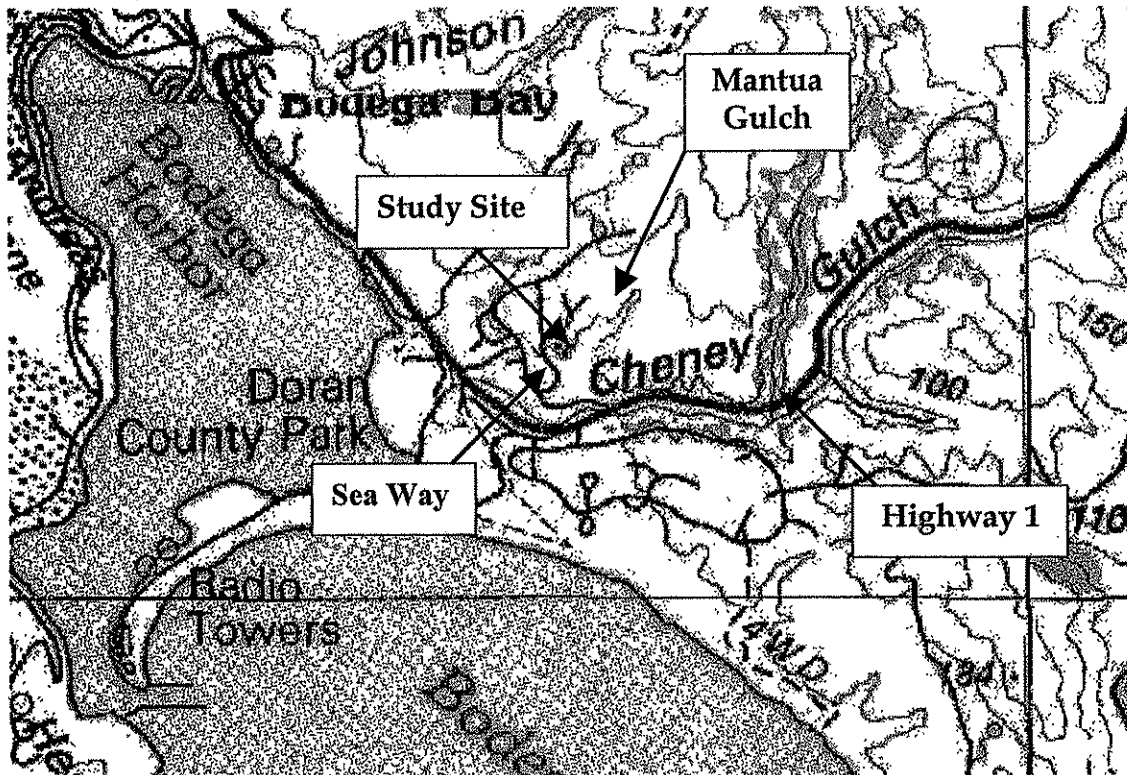
µg/l = micrograms per liter.

Groundwater samples were collected on August 24, 2004.



## PLATES





APPROXIMATE SCALE  
(feet)



Ref: USGS Bodega Quad, dated 1987

PROJECT NO.: 766

DRAWN BY: BC 6/18/03

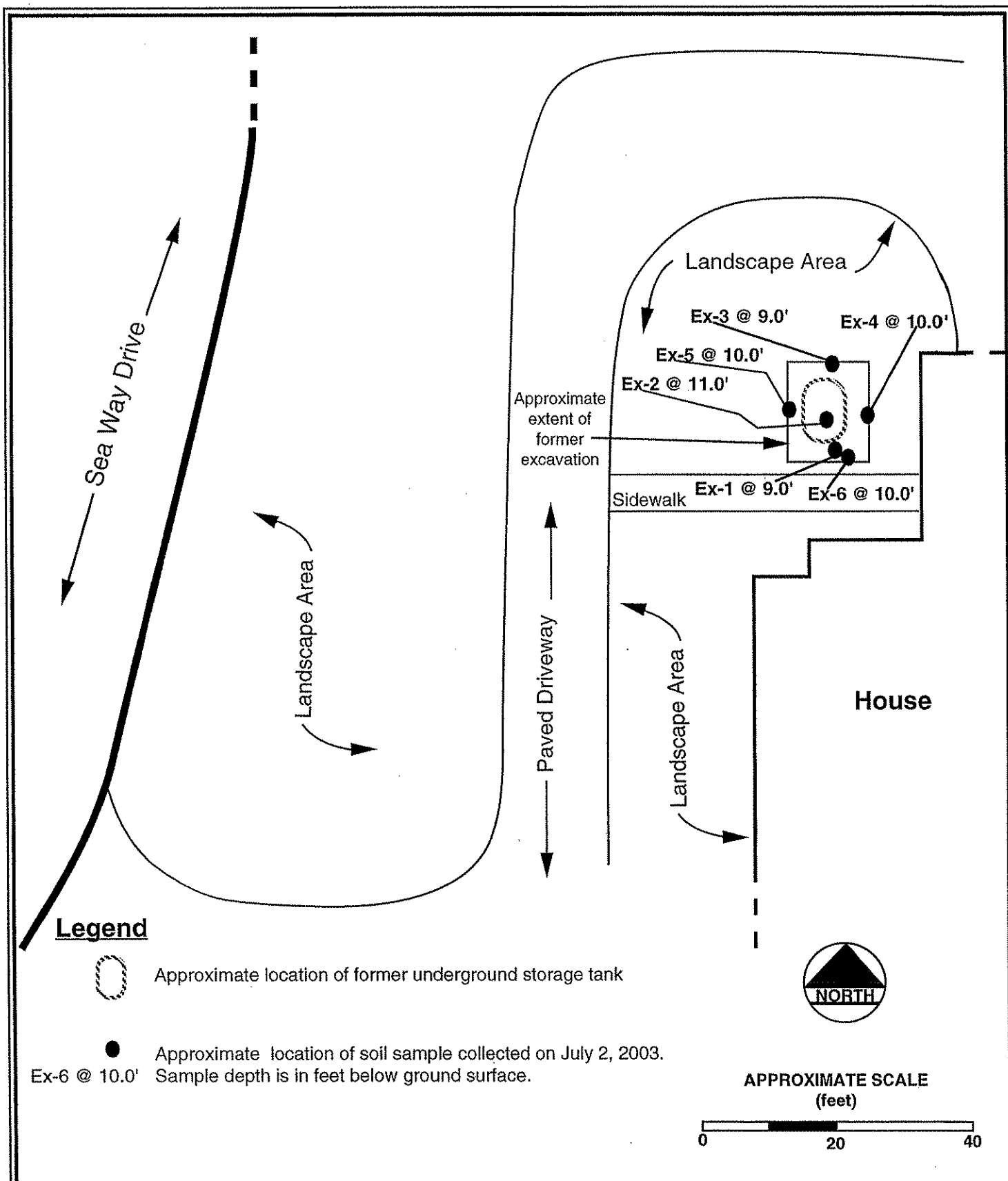
CHECKED BY:

APPROVED BY: *DMD 1/21/05*

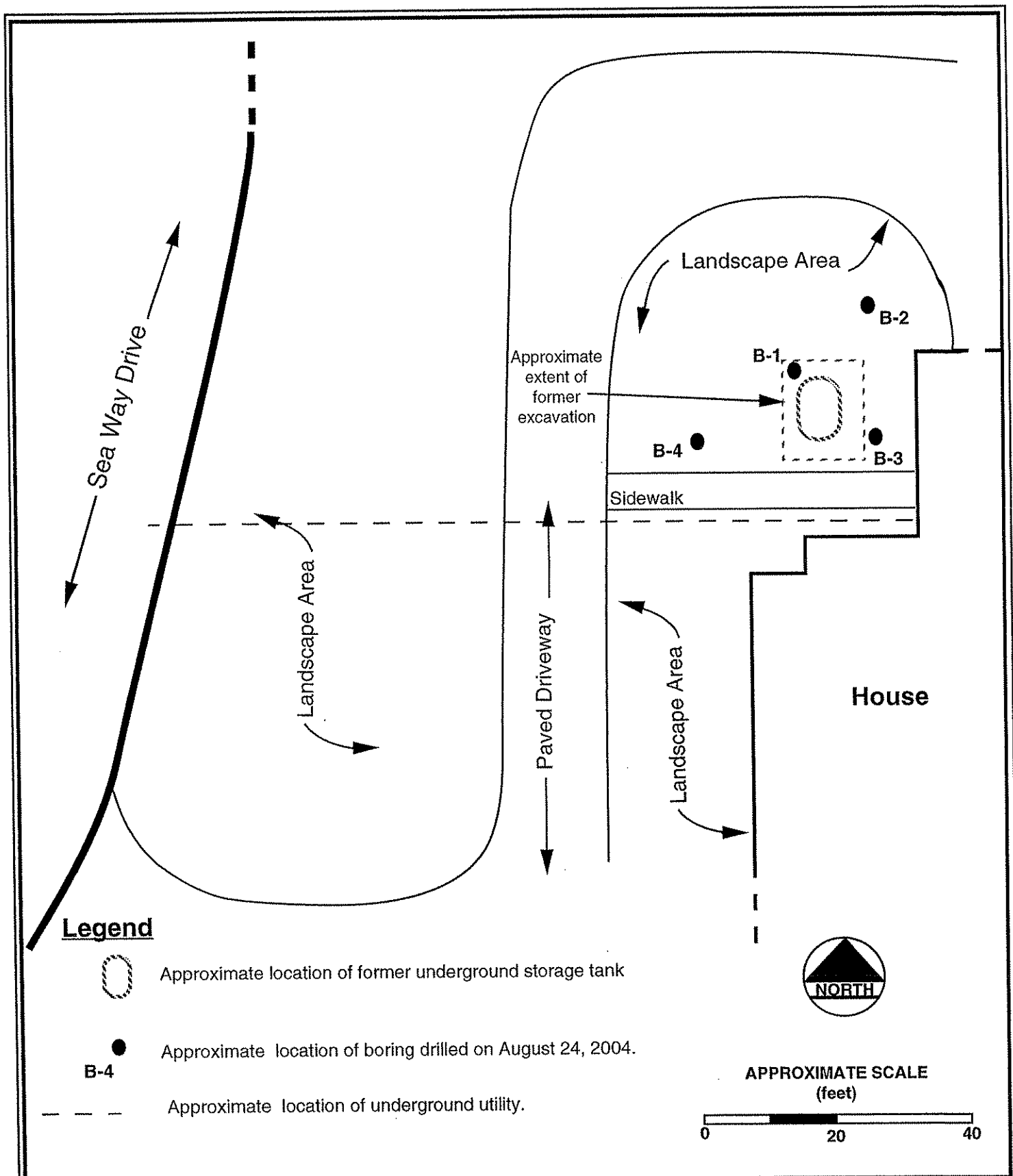
Brunsing Associates, Inc.

**PLATE 1**

Site Vicinity Map  
2270 Sea Way  
Bodega Bay, California



PROJECT NO.: 766			Brunsing Associates, Inc.		<b>PLATE 2</b> Excavation Sample Location Map 2270 Sea Way Bodega Bay, California
DRAWN BY:	BC	6/18/03			
CHECKED BY:					
APPROVED BY:	<i>[Signature]</i>	1/21/05			



PROJECT NO.: 766			<b>Brunsing Associates, Inc.</b>	<b>PLATE 3</b> Soil Boring Location Map 2270 Sea Way Bodega Bay, California
DRAWN BY:	BC	6/18/03		
CHECKED BY:				
APPROVED BY:	<i>[Signature]</i>	1/21/05		

BRUNSG ASSOCIATES, INC.  
P.O. BOX 588  
Windsor, CA. 95492  
Telephone: (707) 838-3027  
Fax: (707) 838-4420

BORING NO.: **B-1**

SHEET 1 OF 1

PROJECT:

LOCATION: **Bodega Bay, California**

PROJECT NO.: **766**

LOGGED BY: **WHHC**

COORDINATES:

SURFACE ELEVATION:

DATUM:

SAMPLE INFORMATION						DESCRIPTION	STRATA	WELL CONSTRUCTION DETAIL
DEPTH FEET	LAB SAMPLE	SAMPLE TYPE	BLOW COUNTS	Recovery (%)	PID (ppm)			
5					0.0	BROWN, ORANGE-BROWN SILTY SAND (SM) dry, medium dense		
						BROWN SANDY GRAVEL (GP) dry, loose, backfill from excavation		
						BROWN SANDY SILT (ML) dry, medium dense		5
10			40 42 50		0.0 0.0	BROWN, ORANGE-BROWN SILTY GRAVEL (GM) dry, very dense, large angular gravels, some charcoal bits at 11.0'		10
15			50/4"		0.0	GRAY-BLACK SANDY SILT (ML) dry, very dense. Possible siltstone, little fracturing, little weathering		15
20			30/0"		0.0			20

DRILLING CONTRACTOR: Clear Heart

DRILLING METHOD: 4" diameter solid stem auger

DRILLING EQUIPMENT: 8X8

DRILLING STARTED: 8/24/04 ENDED: 8/24/04

REMARKS Placed 2-inch diameter PVC casing with 0.020" slots in boring.  
Purged approximately 1 gallon of water prior to sampling.

See key sheet for symbols and abbreviations used above.



BRUNSG ASSOCIATES, INC.

Job No.: 766

Appr.: *RMD*

Date: 1/21/05

# LOG OF BORING B-1

2077 Sea Way  
Bodega Bay, California

PLATE

4



BRUNSG ASSOCIATES, INC.  
P.O. BOX 588  
Windsor, CA. 95492  
Telephone: (707) 838-3027  
Fax: (707) 838-4420

BORING NO.: **B-2**

SHEET 1 OF 1

PROJECT:

LOCATION: **Bodega Bay, California**PROJECT NO.: **766**LOGGED BY: **WHHC**

COORDINATES:

SURFACE ELEVATION:

DATUM:

SAMPLE INFORMATION						STRATA	WELL CONSTRUCTION DETAIL
DEPTH FEET	LAB SAMPLE	SAMPLE TYPE	BLOW COUNTS	Recovery (%)	PID (ppm)		
5			9 16 28				5
10			20 50/6"		0.0		10
15			50/1"		0.0		15
20			18 50/3"				20

DRILLING CONTRACTOR: Clear Heart

DRILLING METHOD: 4" diameter solid stem auger

DRILLING EQUIPMENT: 8X8

DRILLING STARTED: 8/24/04 ENDED: 8/24/04

REMARKS

Placed 2-inch diameter PVC casing with 0.020" slots in boring.  
Purged approximately 1/2 gallon of water prior to sampling.

See key sheet for symbols and abbreviations used above.



BRUNSG ASSOCIATES, INC.

Job No.: 766

Appr.: *WMD*

Date: 1/21/05

**LOG OF BORING B-2**

2077 Sea Way  
Bodega Bay, California

PLATE

**5**

BRUNSG ASSOCIATES, INC.  
P.O. BOX 588  
Windsor, CA. 95492  
Telephone: (707) 838-3027  
Fax: (707) 838-4420

BORING NO.: **B-3**

SHEET 1 OF 1

PROJECT:

LOCATION: **Bodega Bay, California**

PROJECT NO.: **766**

COORDINATES:

LOGGED BY: **WHHC**

SURFACE ELEVATION:

DATUM:

SAMPLE INFORMATION						DESCRIPTION	STRATA	WELL CONSTRUCTION DETAIL
DEPTH FEET	LAB SAMPLE	SAMPLE TYPE	BLOW COUNTS	Recovery (%)	PID (ppm)			
						BROWN SANDY SILT (ML) dry, loose		
5					0.0	BROWN SANDY GRAVEL (GP) dry, loose		5
10			35 50/3"		0.0	BROWN, ORANGE-BROWN SILTY GRAVEL (GM) dry, very dense		10
15			50/4"		0.0			15
			50/2"			GRAY-BLACK SANDY SILT (ML) dry, very dense		

DRILLING CONTRACTOR: Clear Heart

DRILLING METHOD: 4" diameter solid stem auger

DRILLING EQUIPMENT: 8X8

DRILLING STARTED: 8/24/04 ENDED: 8/24/04

REMARKS Placed 2-inch diameter PVC casing with 0.020" slots in boring.  
Purged approximately 1 gallon of water prior to sampling.

See key sheet for symbols and abbreviations used above.



BRUNSG ASSOCIATES, INC.

Job No.: 766

Appr.: *DMJ*

Date: 1/21/05

**LOG OF BORING B-3**

2077 Sea Way  
Bodega Bay, California

PLATE

**6**

BRUNSG ASSOCIATES, INC.  
P.O. BOX 588  
Windsor, CA. 95492  
Telephone: (707) 838-3027  
Fax: (707) 838-4420

BORING NO.: **B-4**

SHEET 1 OF 1

PROJECT:

LOCATION: **Bodega Bay, California**

PROJECT NO.: **766**

LOGGED BY: **WHHC**

COORDINATES:

SURFACE ELEVATION:

DATUM:

SAMPLE INFORMATION						DESCRIPTION	STRATA	WELL CONSTRUCTION DETAIL
DEPTH FEET	LAB SAMPLE	SAMPLE TYPE	BLOW COUNTS	Recovery (%)	PID (ppm)			
						BROWN SANDY SILT (ML) dry, loose		
5			3 6 6					
10			35 50		0.0			
15			50/2"					
			50/5"					

DRILLING CONTRACTOR: Clear Heart

DRILLING METHOD: 4" diameter solid stem auger

DRILLING EQUIPMENT: 8X8

DRILLING STARTED: 8/24/04 ENDED: 8/24/04

REMARKS

Placed 2-inch diameter PVC casing with 0.020" slots in boring.  
Purged approximately 1 gallon of water prior to sampling.

See key sheet for symbols and abbreviations used above.



BRUNSG ASSOCIATES, INC.

Job No.: 766

Appr.: *[Signature]*

Date: 1/21/05

**LOG OF BORING B-4**

2077 Sea Way  
Bodega Bay, California

PLATE

**7**

UNIFIED SOIL CLASSIFICATION SYSTEM	MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
				GRAPH	LETTER	
	COARSE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS  (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
					GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
			GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		SAND AND SANDY SOILS  MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS  (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
					SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
			SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
					SC	CLAYEY SANDS, SAND - CLAY MIXTURES
			FINE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS  LIQUID LIMIT LESS THAN 50		
		CL			INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
		OL			ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY	
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

#### RELATIVE CONSISTENCY CLASSIFICATION

GRANULAR	COHESIVE
Silts, Sands, and Gravels	Clays and Clayey Silts
VERY LOOSE	SOFT
LOOSE	MEDIUM STIFF
MEDIUM DENSE	STIFF
DENSE	VERY STIFF
VERY DENSE	HARD

Relative Moisture Contents
DRY
DAMP
MOIST
WET
SATURATED

- Undisturbed sample retained  
 - Recovered, not retained  
 - Bulk Sample  
 - Initial depth to water  
 - Depth to water



Brunsing Associates, Inc.  
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 Tel: (707) 838-3027

Job No.: 766

Appr.:

Date: 12/16/04

#### UNIFIED SOIL CLASSIFICATION CHART

2077 Sea Way  
 Bodega Bay, California

PLATE

8

# **APPENDIX A**

## **Analytical Laboratory Report for Soil Samples**



## Laboratory Report Project Overview

EDF 1.2a

### Laboratory:

Lab Report Number:

Project Name:

Work Order Number:

Control Sheet Number:

Bace Analytical, Windsor, CA

4387

2077 SEA WAY

766

NA

**FILE COPY**

## Report Summary

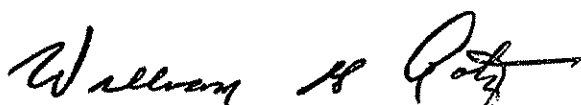
Labreport	Sampleid	Labreportid	Mtr	QC	Anncode	Exmcode	Logdate	Extdate	Anadate	Lablotctf	Run Sub
4387	B-1-11.0'	4387-1	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	5
4387	B-1-11.0'	4387-1	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	9
4387	B-1-15.0'	4387-2	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	6
4387	B-1-15.0'	4387-2	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	10
4387	B-2-10.5'	4387-3	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	7
4387	B-2-10.5'	4387-3	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	11
4387	B-3-15.0'	4387-4	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	8
4387	B-3-15.0'	4387-4	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	12
4387	B-4-10.5'	4387-5	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	9
4387	B-4-10.5'	4387-5	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	13
4387	B-4-18.0'	4387-6	SO	CS	CATPH-D	SW3550B	08/24/200	09/01/200	09/01/200	09012004A	10
4387	B-4-18.0'	4387-6	SO	CS	SW8021F	SW5035	08/24/200	08/25/200	08/27/200	08272004A	14
		4387MB	SO	LB1	CATPH-D	SW3550B	/ /	09/01/200	09/01/200	09012004A	2
		4387MB	SO	LB1	SW8021F	SW5035	/ /	08/27/200	08/27/200	08272004A	1
		4387MS	SO	MS1	CATPH-D	SW3550B	/ /	09/01/200	09/01/200	09012004A	11
		4387MS	SO	MS1	SW8021F	SW5035	/ /	08/27/200	08/27/200	08272004A	16
		4387SD	SO	SD1	CATPH-D	SW3550B	/ /	09/01/200	09/01/200	09012004A	12
		4387SD	SO	SD1	SW8021F	SW5035	/ /	05/24/200	05/24/200	08272004A	8

Lab Report No.: 4387 Date: 09/20/2004

Page: 1

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-1-11.0'		Lab Samp ID: 4387-1				
Descr/Location: B-1-11.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1025		Analysis Date: 09/01/2004				
Matrix: Soil		QC Batch: 09012004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0	PQL	ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	87%		1

Approved by:



Date:

9/20/04

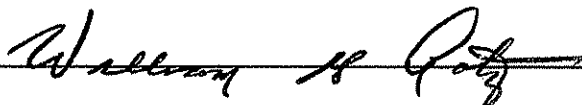


Lab Report No.: 4387 Date: 09/20/2004

Page: 2

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-1-15.0'	Lab Samp ID: 4387-2					
Descr/Location: B-1-15.0'	Rec'd Date: 08/25/2004					
Sample Date: 08/24/2004	Prep Date: 09/01/2004					
Sample Time: 1044	Analysis Date: 09/01/2004					
Matrix: Soil	QC Batch: 09012004A					
Basis: Wet	Notes:					
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0	PQL	3.0	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	94%		1

Approved by:



Date:

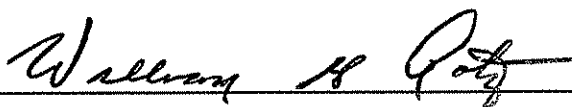
9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 3

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-2-10.5'		Lab Samp ID: 4387-3				
Descr/Location: B-2-10.5'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1203		Analysis Date: 09/01/2004				
Matrix: Soil		QC Batch: 09012004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0	PQL	ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	91%		1

Approved by:



Date:

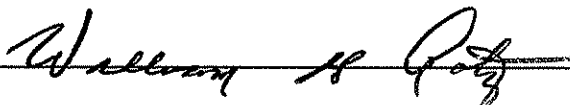
9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 4

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-3-15.0'		Lab Samp ID: 4387-4				
Descr/Location: B-3-15.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1433		Analysis Date: 09/01/2004				
Matrix: Soil		QC Batch: 09012004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0	PQL	ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	85%		1

Approved by:



Date:

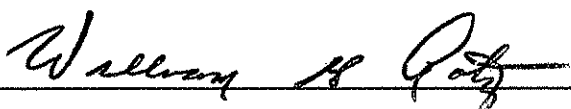
9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 5

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-4-10.5'		Lab Samp ID: 4387-5				
Descr/Location: B-4-10.5'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1611		Analysis Date: 09/01/2004				
Matrix: Soil		QC Batch: 09012004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0	PQL	ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	80%		1

Approved by:



Date:

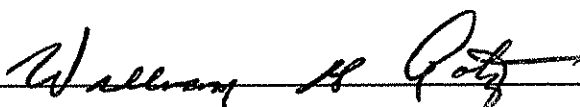
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Lab Report No.: 4387 Date: 09/20/2004

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Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3550B				
Field ID: B-4-18.0'		Lab Samp ID: 4387-6				
Descr/Location: B-4-18.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1650		Analysis Date: 09/01/2004				
Matrix: Soil		QC Batch: 09012004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0 PQL		ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140	SLSA	87%		1

Approved by:



Date:

9/20/04

Lab Report No.: 4387 Date: 09/20/2004

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Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-1-11.0'		Lab Samp ID: 4387-1				
Descr/Location: B-1-11.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1025		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130 SLSA		85%		1

Approved by:



Date:

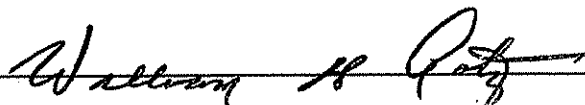
9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 8

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-1-15.0'		Lab Samp ID: 4387-2				
Descr/Location: B-1-15.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1044		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	74%		1

Approved by:



Date:

9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 9

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-2-10.5'		Lab Samp ID: 4387-3				
Descr/Location: B-2-10.5'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1203		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene	70-130	SLSA		86%		1

Approved by:



Date:

9/20/04

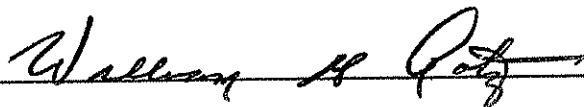


Lab Report No.: 4387 Date: 09/20/2004

Page: 10

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-3-15.0'		Lab Samp ID: 4387-4				
Descr/Location: B-3-15.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1433		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	78%		1

Approved by:



Date:

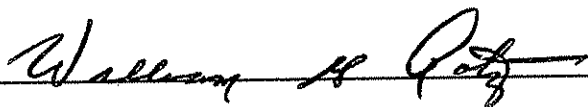
9/20/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 11

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-4-10.5'		Lab Samp ID: 4387-5				
Descr/Location: B-4-10.5'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1611		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	81%		1

Approved by:



Date:

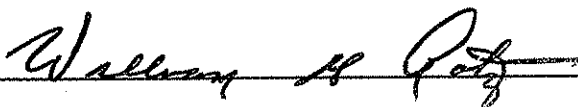
9/21/04

Lab Report No.: 4387 Date: 09/20/2004

Page: 12

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5035				
Field ID: B-4-18.0'		Lab Samp ID: 4387-6				
Descr/Location: B-4-18.0'		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/25/2004				
Sample Time: 1650		Analysis Date: 08/27/2004				
Matrix: Soil		QC Batch: 08272004A				
Basis: Wet		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	80%		1

Approved by:



Date:

9/20/04

# QA/QC Report Method Blank Summary

Bace Analytical, Windsor, CA

Lab Report No.: 4387    Date: 09/20/2004

Page: 13

QC Batch: 08272004A		Analysis: Volatiles by GC/Gasoline Range Organics	
Matrix: Soil		Method: SW8021F	
Lab Samp ID: 4387MB		Prep Meth: SW5035	
Analysis Date: 08/27/2004		Prep Date: 08/27/2004	
Basis: Wet		Notes:	

Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	1.8	5.0 PQL		ND	UG/KG	1
Toluene	2.0	5.0 PQL		ND	UG/KG	1
Ethylbenzene	2.0	5.0 PQL		ND	UG/KG	1
Xylenes	2.0	5.0 PQL		ND	UG/KG	1

SURROGATE AND INTERNAL STANDARD RECOVERIES:		
4-Bromofluorobenzene	70-130 SLSA	93%

1
---

# QA/QC Report

## Matrix Spike/Duplicate Matrix Spike Summary

Bace Analytical, Windsor, CA

Page: 14

Lab Report No.: 4387 Date: 09/20/2004

QC Batch: 08272004A  
 Matrix: Soil  
 Lab Samp ID: 4387MS  
 Basis: Wet

Project Name: 2077 SEA WAY  
 Project No.: 766  
 Field ID: B-4-18.0'  
 Lab Ref ID: 4387-6

Analyte	Analysis Method	Spike Level		Sample Result	Spike Result		Units	% Recoveries			Acceptance Criteria	
		MS	DMS		MS	DMS		MS	DMS	RPD	% Rec	RPD
Benzene	SW8021F	80.0	80.0	ND	77.5	72.4	UG/KG WW	96.9	90.5	6.8	130-72	MSA 20MSP
Ethylbenzene	SW8021F	80.0	80.0	ND	68.4	66.5	UG/KG WW	85.5	83.1	2.8	130-72	MSA 20MSP
Toluene	SW8021F	80.0	80.0	ND	71.3	68.1	UG/KG WW	89.1	85.1	4.6	130-72	MSA 20MSP
Xylenes	SW8021F	240.	240.	ND	200.	190.	UG/KG WW	83.3	79.2	5.0	130-74	MSA 20MSP
4-Bromofluorobenzene	SW8021F	100.	100.	80.	85.	102.	PERCENT WW	85.0	102	18	130-70	SLSA 20SLSP

# QA/QC Report Method Blank Summary

Bace Analytical, Windsor, CA

Lab Report No.: 4387 Date: 09/20/2004

Page: 15

QC Batch: 09012004A	Analysis: CA LUFT Method for Diesel Range Organics
Matrix: Soil	Method: CATPH-D
Lab Samp ID: 4387MB	Prep Meth: SW3550B
Analysis Date: 09/01/2004	Prep Date: 09/01/2004
Basis: Wet	Notes:

Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.80	2.0 PQL		ND	MG/KG	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		60-140 SLISA		93%		1

# QA/QC Report Matrix Spike/Duplicate Matrix Spike Summary

Bace Analytical, Windsor, CA

Page: 16

Lab Report No.: 4387 Date: 09/20/2004

QC Batch: 09012004A				Project Name: 2077 SEA WAY									
Matrix: Soil				Project No.: 766									
Lab Samp ID: 4387MS				Field ID: B-4-10.5'									
Basis: Wet				Lab Ref ID: 4387-5									
Analyte	Analysis Method	Spike Level		Sample Result	Spike Result		Units	% Recoveries			Acceptance Criteria		
		MS	DMS		MS	DMS		MS	DMS	RPD	% Rec	RPD	
Diesel Range Organics (C12-C24)	CATPH-D	80.	80.	ND	63.	66.	MG/KG ww	78.8	82.5	4.6	130-70	MSA	20MSP
o-Terphenyl	CATPH-D	100.	100.	80.	108.	98.	PERCENT ww	108	98.0	9.7	140-60	SLSA	20SLSP

# Chain-of Custody Form

Project #		Project Name		C.O.C. No.		Analysis												Remarks:					
Date Sampled		Sample I.D.		Time (24 Hour)		Sample Type		No. of Containers															
8/24/04		B-1 e 11.0' -		1025		Sail		1 brass		X		4384-1											
		B-1 e 15.0' -		1044				1 brass		X		-2											
		B-2 e 10.5' -		1203				1 brass		X		-3											
		B-3 e 15.0' -		1433				1 brass		X		-4		- Sample from bottom									
		B-4 e 10.5' -		1611				1 brass		X		-5											
		B-4 e 18.0' -		1650				1 brass		X		-6											
Laboratory: <b>BAFS</b>														Preservation: A - HCL; B - H2SO4; C - NaOH; D - HNO3; E - <u>TOE</u> ; F - (specify)									
Relinquished by: (signed)		W. H. W. Coast		Date/Time		8/24/04 2035		Received by: (signed)		8/24/04 144		Remarks:		STILL DAT									
Relinquished by: (signed)				Date/Time				Received by: (signed)															
Relinquished by: (signed)				Date/Time				Received for Laboratory by: (signed)															

**Brunsing Associates, Inc.**  
P.O. Box 588  
5803 Skylane Blvd., Suite A  
Windsor, CA 95492  
(707) 838-3027  
(707) 838-4420 fax



## **APPENDIX B**

### **Analytical Laboratory Report for Groundwater Samples**



## Laboratory Report Project Overview

EDF 1.2a

### Laboratory:

Lab Report Number:

Project Name:

Work Order Number:

Control Sheet Number:

Bace Analytical, Windsor, CA

4388

2077 SEA WAY

766

NA

**FILE COPY**

# Report Summary

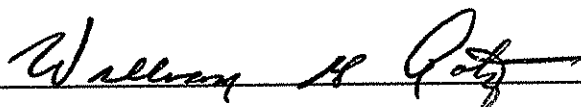
Labreport	Sampleid	Labsampid	Mtrx	QC	Anncode	Exmcode	Logdate	Extdate	Anadate	Lablotctf	Run Sub
4388	B-1	4388-1	W	CS	CATPH-D	SW3510C	08/24/200	09/01/200	09/01/200	09012004B	13
							4	4	4		
4388	B-1	4388-1	W	CS	SW8021F	SW5030B	08/24/200	08/27/200	08/27/200	08272004	18
							4	4	4		
4388	B-2	4388-2	W	CS	CATPH-D	SW3510C	08/24/200	09/01/200	09/01/200	09012004B	14
							4	4	4		
4388	B-2	4388-2	W	CS	SW8021F	SW5030B	08/24/200	08/27/200	08/27/200	08272004	19
							4	4	4		
4388	B-3	4388-3	W	CS	CATPH-D	SW3510C	08/24/200	09/01/200	09/01/200	09012004B	15
							4	4	4		
4388	B-3	4388-3	W	CS	SW8021F	SW5030B	08/24/200	08/27/200	08/27/200	08272004	20
							4	4	4		
4388	B-4	4388-4	W	CS	CATPH-D	SW3510C	08/24/200	09/01/200	09/01/200	09012004B	16
							4	4	4		
4388	B-4	4388-4	W	CS	SW8021F	SW5030B	08/24/200	08/27/200	08/27/200	08272004	21
							4	4	4		
		090104MS	W	NC	CATPH-D	SW3510C	/ /	09/01/200	09/01/200	09012004B	1
								4	4		
		4388MB	W	LB1	CATPH-D	SW3510C	/ /	09/01/200	09/01/200	09012004B	2
								4	4		
		4388MB	W	LB1	SW8021F	SW5030B	/ /	08/27/200	08/27/200	08272004	1
								4	4		
		4388MS	W	MS1	CATPH-D	SW3510C	/ /	09/01/200	09/01/200	09012004B	17
								4	4		
		4388MS	W	MS1	SW8021F	SW5030B	/ /	08/27/200	08/27/200	08272004	22
								4	4		
		4388SD	W	SD1	CATPH-D	SW3510C	/ /	09/01/200	09/01/200	09012004B	18
								4	4		
		4388SD	W	SD1	SW8021F	SW5030B	/ /	08/27/200	08/27/200	08272004	23
								4	4		

Lab Report No.: 4388 Date: 09/20/2004

Page: 1

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3510C				
Field ID: B-1		Lab Samp ID: 4388-1				
Descr/Location: B-1		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1335		Analysis Date: 09/01/2004				
Matrix: Water		QC Batch: 09012004B				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.040	0.050 PQL		ND	MG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		65-135 SLSA		87%		1

Approved by:



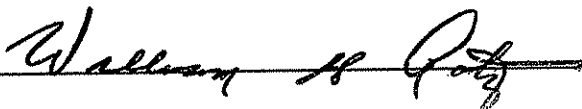
Date: 9/20/04

Lab Report No.: 4388 Date: 09/20/2004

Page: 2

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3510C				
Field ID: B-2		Lab Samp ID: 4388-2				
Descr/Location: B-2		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1705		Analysis Date: 09/01/2004				
Matrix: Water		QC Batch: 09012004B				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.040	0.050 PQL		ND	MG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		65-135 SLSA		104%		1

Approved by:



Date:

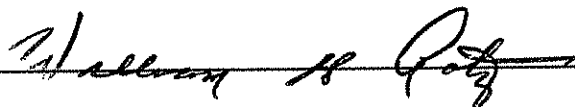
9/20/04

Lab Report No.: 4388 Date: 09/20/2004

Page: 3

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3510C				
Field ID: B-3		Lab Samp ID: 4388-3				
Descr/Location: B-3		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1535		Analysis Date: 09/01/2004				
Matrix: Water		QC Batch: 09012004B				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.040	0.050	PQL	0.30	MG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		65-135	SLSA	98%		1

Approved by:



Date:

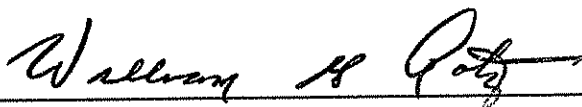
9/20/04

Lab Report No.: 4388 Date: 09/20/2004

Page: 4

Project Name: 2077 SEA WAY		Analysis: CA LUFT Method for Diesel Range Organics				
Project No: 766		Method: CATPH-D				
		Prep Meth: SW3510C				
Field ID: B-4		Lab Samp ID: 4388-4				
Descr/Location: B-4		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 09/01/2004				
Sample Time: 1745		Analysis Date: 09/01/2004				
Matrix: Water		QC Batch: 09012004B				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.040	0.050 PQL		ND	MG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
o-Terphenyl		65-135 SLSA		74%		1

Approved by:



Date:

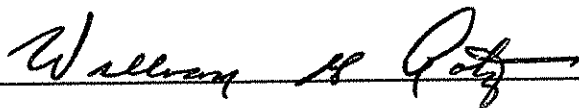
9/20/04

Lab Report No.: 4388 Date: 09/20/2004

Page: 5

Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5030B				
Field ID: B-1		Lab Samp ID: 4388-1				
Descr/Location: B-1		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/27/2004				
Sample Time: 1335		Analysis Date: 08/27/2004				
Matrix: Water		QC Batch: 08272004				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	0.2	0.5 PQL		ND	UG/L	1
Toluene	0.2	0.5 PQL		ND	UG/L	1
Ethylbenzene	0.2	0.5 PQL		ND	UG/L	1
Xylenes	0.2	0.5 PQL		ND	UG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA		93%	1

Approved by:



Date:

9/20/04

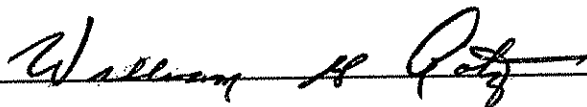


Lab Report No.: 4388 Date: 09/20/2004

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Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5030B				
Field ID: B-2		Lab Samp ID: 4388-2				
Descr/Location: B-2		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/27/2004				
Sample Time: 1705		Analysis Date: 08/27/2004				
Matrix: Water		QC Batch: 08272004				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	0.2	0.5 PQL		ND	UG/L	1
Toluene	0.2	0.5 PQL		ND	UG/L	1
Ethylbenzene	0.2	0.5 PQL		ND	UG/L	1
Xylenes	0.2	0.5 PQL		ND	UG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene	70-130	SLSA		91%		1

Approved by:



Date:

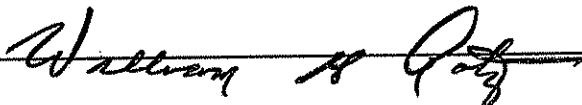
9/20/04

Lab Report No.: 4388 Date: 09/20/2004

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Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5030B				
Field ID: B-3		Lab Samp ID: 4388-3				
Descr/Location: B-3		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/27/2004				
Sample Time: 1535		Analysis Date: 08/27/2004				
Matrix: Water		QC Batch: 08272004				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	0.2	0.5 PQL		ND	UG/L	1
Toluene	0.2	0.5 PQL		ND	UG/L	1
Ethylbenzene	0.2	0.5 PQL		ND	UG/L	1
Xylenes	0.2	0.5 PQL		ND	UG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	116%		1

Approved by:



Date:

9/20/04

Lab Report No.: 4388 Date: 09/20/2004

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Project Name: 2077 SEA WAY		Analysis: Volatiles by GC/Gasoline Range Organics				
Project No: 766		Method: SW8021F				
		Prep Meth: SW5030B				
Field ID: B-4		Lab Samp ID: 4388-4				
Descr/Location: B-4		Rec'd Date: 08/25/2004				
Sample Date: 08/24/2004		Prep Date: 08/27/2004				
Sample Time: 1745		Analysis Date: 08/27/2004				
Matrix: Water		QC Batch: 08272004				
Basis: Not Filtered		Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	0.2	0.5 PQL		ND	UG/L	1
Toluene	0.2	0.5 PQL		ND	UG/L	1
Ethylbenzene	0.2	0.5 PQL		ND	UG/L	1
Xylenes	0.2	0.5 PQL		ND	UG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130	SLSA	95%		1

Approved by:



Date:

9/20/04

# QA/QC Report Method Blank Summary

Bace Analytical, Windsor, CA

Lab Report No.: 4388    Date: 09/20/2004

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QC Batch:	08272004	Analysis:	Volatiles by GC/Gasoline Range Organics			
Matrix:	Water	Method:	SW8021F			
Lab Samp ID:	4388MB	Prep Meth:	SW5030B			
Analysis Date:	08/27/2004	Prep Date:	08/27/2004			
Basis:	Not Filtered	Notes:				
Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Benzene	0.2	0.5 PQL		ND	UG/L	1
Toluene	0.2	0.5 PQL		ND	UG/L	1
Ethylbenzene	0.2	0.5 PQL		ND	UG/L	1
Xylenes	0.2	0.5 PQL		ND	UG/L	1
SURROGATE AND INTERNAL STANDARD RECOVERIES:						
4-Bromofluorobenzene		70-130 SLSA		94%		1

# QA/QC Report

## Matrix Spike/Duplicate Matrix Spike Summary

Bace Analytical, Windsor, CA

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Lab Report No.: 4388 Date: 09/20/2004

QC Batch: 08272004  
Matrix: Water  
Lab Samp ID: 4388MS  
Basis: Not Filtered

Project Name: 2077 SEA WAY  
Project No.: 766  
Field ID: B-4  
Lab Ref ID: 4388-4

Analyte	Analysis Method	Spike Level		Sample Result	Spike Result		Units	% Recoveries		Acceptance Criteria	
		MS	DMS		MS	DMS		MS	DMS	% Rec	RPD
Benzene	SW8021F	40.0	40.0	ND	39.9	39.5	UG/L	99.8	98.8	125-75	MSA 20MSP
Ethylbenzene	SW8021F	40.0	40.0	ND	34.0	33.5	UG/L	85.0	83.8	125-75	MSA 20MSP
Toluene	SW8021F	40.0	40.0	ND	36.3	36.0	UG/L	90.8	90.0	125-75	MSA 20MSP
Xylenes	SW8021F	120.	120.	ND	109.	109.	UG/L	90.8	90.8	125-75	MSA 20MSP
4-Bromofluorobenzene	SW8021F	100.	100.	95.	116.	115.	PERCENT	116	115	130-70	SLSA 20SLSP

# QA/QC Report Method Blank Summary

Bace Analytical, Windsor, CA

Lab Report No.: 4388 Date: 09/20/2004

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QC Batch: 09012004B	Analysis: CA LUFT Method for Diesel Range Organics
Matrix: Water	Method: CATPH-D
Lab Samp ID: 4388MB	Prep Meth: SW3510C
Analysis Date: 09/01/2004	Prep Date: 09/01/2004
Basis: Not Filtered	Notes:

Analyte	Det Limit	Rep Limit	Note	Result	Units	Pvc Dil
Diesel Range Organics (C12-C24)	0.040	0.050 PQL		ND	MG/L	1

SURROGATE AND INTERNAL STANDARD RECOVERIES:				
o-Terphenyl	65-135	SLSA	104%	1

Bace Analytical, Windsor, CA

Lab Report No.: 4388 Date: 09/20/2004

Project Name: Lab Generated or Non COE Sample  
Project No.: Lab Generated or Non COE Sample  
Field ID: Lab Generated or Non COE Sample  
Lab Ref ID: 090104MS

Analyte	Analysis Method	Spike Level MS DMS	Sample Result	Spike Result MS DMS	Units	% Recoveries MS DMS RPD	Acceptance Criteria % Rec RPD
Diesel Range Organics (C12-C24)	CATPH-D	1.66	ND	1.75 1.72	MG/L	105 104 0.96	130-65 MSA 20MSP
o-Terphenyl	CATPH-D	100.	87.	107. 96.	PERCENT	107 96.0 11	135-65 SLSA 25SLSP

# Chain-of Custody Form

Project #		Project Name		Analysis		C.O.C. No.	
766		2077 SeaWay				11103	
L.P. No.		Sampler's Signature				Remarks:	
		W. W. W. Coed					
Date Sampled	Sample I.D.	Time (24 Hour)	Sample Type	No. of Containers	TPH	BTZ	802
8/24/04	B-1	1335	Water	3	X	X	
	B-2	1705		3	X	X	
	B-3	1535		3	X	X	
	B-4	1745		3	X	X	
<p>Preservation: A - HCL; B - H2SO4; C - NaOH; D - HNO3; E - ( ); F - (specify)</p>							
<p>Laboratory: BAFS</p>							
Relinquished by: (signed)		Date/Time		Received by: (signed)		Date/Time	
W. W. W. Coed		8/24/04 2040		8/25/04 7431		7431	
Relinquished by: (signed)		Date/Time		Received by: (signed)		Date/Time	
Relinquished by: (signed)		Date/Time		Received for Laboratory by: (signed)		Date/Time	
				W. W. W. Coed			
<p>Remarks: Standard TAT</p>							
<p>Brunsing Associates, Inc. P.O. Box 588 5803 Skylane Blvd., Suite A Windsor, CA 95492 (707) 838-3027 (707) 838-4420 fax</p>							